

1       What is claimed is:

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3       1.    A multicolor-printer, comprising:

4       a plurality of print stations arranged to generate an image on a recording  
5 medium during the movement of the recording medium;

6       a recording medium conveyor;

7       a plurality of similar first encoding marks arranged along the conveyor,

8       sensor arrangements associated with the print stations, responsive to  
9 the first encoding marks and arranged to generate signals providing informa-  
10 tion about the movement of the conveyor with respect to the corresponding  
11 print station;

12       at least one index marking indicative of a reference position of the con-  
13 veyor;

14       wherein the sensor arrangements are arranged to generate a signal re-  
15 sponsive to the index marking, thereby providing information about the refer-  
16 ence position of the conveyor with respect to the corresponding print station;  
17 and

18       wherein the printer is arranged to register images of different print sta-  
19 tions with each other based on the movement and reference-position informa-  
20 tion.

21

22       2.    The multicolor-printer of claim 1, further comprising second encod-  
23 ing marks associated with the conveyor and inclined to the first encoding  
24 marks;

25       the sensor arrangements being arranged to also generate second sig-  
26 nals from the second encoding marks, wherein the first and second signals  
27 are related and their relation bears information about a conveyor displace-  
28 ment in a lateral direction with respect to the corresponding print station; and

29       wherein the printer is arranged to register images of different print sta-  
30 tions with each other based on the movement and lateral-displacement infor-  
31 mation.

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1           3.    The multicolor-printer of claim 1, arranged to  
2           count the encoding marks starting with the detection of the index mark-  
3           ing at each print station;  
4           start to print an image, by the first print station, and record a correspond-  
5           ing encoding-mark count of the first print station;  
6           start to print an image, by a subsequent print station in response to  
7           equality of the subsequent print station's encoding-mark count and the re-  
8           corded first print station's encoding-mark count.

9  
10          4.    The multicolor-printer of claim 1, wherein at least one of the first  
11          encoding marks and the at least one index marking are provided on an en-  
12          coder section at an edge of the conveyor .

13  
14          5.    The multicolor-printer of claim 1, wherein at least one of the first  
15          encoding marks and the at least one index marking are applied to the con-  
16          veyor by etching or are attached to the conveyor on a strip.

17  
18          6.    The multicolor-printer of claim 1, wherein the sensor arrangements  
19          are attached to their respective print stations.

20  
21          7.    The multicolor-printer of claim 1, wherein the sensor arrangements  
22          comprises a first encoder sensor and an index-marking sensor.

23  
24          8.    The multicolor-printer of claim 1, wherein the printer is an ink-jet  
25          printer.

26  
27          9.    The multicolor-printer of claim 1, wherein the printer is a page-  
28          width printer.

29  
30          10.   The multicolor-printer of claim 1, wherein the printer is a large-  
31          format printer.

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1           11. A multicolor-printer, comprising:  
2           a plurality of print stations arranged to generate an image on a recording  
3 medium;  
4           a conveyor arranged to move the recording medium in an advance di-  
5 rection;  
6           a plurality of similar first encoding marks arranged along the conveyor,  
7           sensor arrangements associated with the print stations, responsive to  
8 the first encoding marks and arranged to generate first signals providing in-  
9 formation about the advance movement of the conveyor with respect to the  
10 corresponding print station;  
11          second encoding marks inclined to the first encoding marks;  
12          wherein the sensor arrangements are arranged to also generate second  
13 signals from the second encoding marks, wherein the first and second signals  
14 are related and their relation bears information about a conveyor displace-  
15 ment in a lateral direction with respect to the corresponding print station; and  
16          wherein the printer is arranged to register images of different print sta-  
17 tions with each other based on the movement and lateral-displacement infor-  
18 mation.

19  
20          12. The multicolor-printer of claim 11, further comprising at least one  
21 index marking indicative of a reference position of the conveyor;  
22          wherein the sensor arrangements are arranged to also generate a signal  
23 responsive to the index marking, thereby providing information about the ref-  
24 erence position of the conveyor with respect to the corresponding print sta-  
25 tion; and  
26          wherein the printer is arranged to register images of different print sta-  
27 tions with each other in the advance direction based on the movement and  
28 reference-position information.

29  
30          13. The multicolor-printer of claim 11, wherein the second encoding  
31 marks are inclined to the lateral direction at an angle of approximately 45°.  
32

1           14. The multicolor-printer of claim 11, wherein the first encoding marks  
2 and the second encoding marks are provided on an encoder section at an  
3 edge of the conveyor.  
4

5           15. The multicolor-printer of claim 11, wherein the sensor arrange-  
6 ments are attached to their respective print stations.  
7

8           16. The multicolor-printer of claim 11, wherein the sensor arrange-  
9 ments comprises a first and a second encoder sensor.  
10

11           17. A method of printing images onto each other on a recording me-  
12 dium using a printer having a plurality of print stations and a recording me-  
13 dium conveyor equipped with a plurality of similar first encoding marks and at  
14 least one index marking indicative of a reference position of the conveyor,  
15 comprising:

16           moving the conveyor in an advance direction, thereby detecting the in-  
17 dex marking and the encoding marks and counting the encoding marks start-  
18 ing with the detection of the index marking at each print station;

19           starting to print an image, by the first print station, and recording a cor-  
20 responding encoding-mark count of the first print station;

21           starting to print an image, by a subsequent print station in response to  
22 equality of the subsequent print station's encoding-mark count and the re-  
23 corded first print station's encoding-mark count.  
24

25           18. The method of claim 17, wherein the first print station's recorded  
26 encoding-mark count and the equal subsequent print station's recording-mark  
27 count correspond to an image reference position which passes the print sta-  
28 tions before they actually start to print.  
29

1        19. The method of claim 17, wherein the recording medium conveyor  
2 is also equipped with second encoding marks inclined to the first encoding  
3 marks, further comprising:

4        detecting the first and second encoding marks at each print station while  
5 moving the conveyor to print images on the recording medium, wherein detec-  
6 tion signals of the first and second encoding marks are related and their rela-  
7 tion bears information about a relative lateral conveyor displacement with re-  
8 spect to the corresponding print station, so as to obtain printing-station-  
9 related movement and lateral-displacement information; and

10       registering the images also based on the lateral-displacement informa-  
11 tion.  
12

13       20. A method of printing images onto each other on a recording me-  
14 dium using a printer having a plurality of print stations and a recording me-  
15 dium conveyor equipped with a plurality of similar first encoding marks and at  
16 least one index marking indicative of a reference position of the conveyor,  
17 comprising the steps of:

18       calibrating the distance between the print stations with reference to the  
19 encoding marks by moving the conveyor in an advance direction and detect-  
20 ing the at least one index marking, when moved past the print stations, while  
21 detecting the corresponding encoding marks;

22       moving the conveyor to print images on the recording medium while de-  
23 tecting the encoding marks at each print station, so as to obtain printing-  
24 station-related movement information; and

25       registering the images being printed by the different print stations with  
26 each other based on the movement information and using the distance cali-  
27 bration.  
28

1        21. The method of claim 20, wherein the recording medium conveyor  
2 is also equipped with second encoding marks inclined to the first encoding  
3 marks, further comprising:

4        detecting the first and second encoding marks at each print station while  
5 moving the conveyor to print images on the recording medium, wherein detec-  
6 tion signals of the first and second encoding marks are related and their rela-  
7 tion bears information about a relative lateral conveyor displacement with re-  
8 spect to the corresponding print station, so as to obtain printing-station-  
9 related movement and lateral-displacement information; and

10       registering the images also based on the lateral-displacement informa-  
11 tion.  
12

13       22. A method of printing images onto each other on a recording me-  
14 dium using a printer having a plurality of print stations and a recording me-  
15 dium conveyor equipped with a plurality of first and second encoding marks,  
16 wherein the second encoding marks are inclined to the first encoding marks,  
17 comprising the steps of:

18       moving the conveyor to print images on the recording medium while de-  
19 tecting the first and second encoding marks at each print station, wherein de-  
20 tection signals of the first and second encoding marks are related and their  
21 relation bears information about a relative lateral conveyor displacement with  
22 respect to the corresponding print station, so as to obtain printing-station-  
23 related movement and lateral-displacement information; and

24       registering the images being printed by the different print stations with  
25 each other based on the movement and lateral-displacement information.  
26

1        23. The method of claim 22, wherein the recording medium conveyor  
2 is also equipped with at least one index marking indicative of a reference po-  
3 sition of the conveyor, further comprising:

4        upon moving the conveyor, detecting the index marking and counting at  
5 least the first encoding marks starting with the detection of the index marking  
6 at each print station;

7        starting to print an image, by the first print station, and recording a cor-  
8 responding encoding-mark count of the first print station;

9        starting to print an image, by a subsequent print station in response to  
10 equality of the subsequent print station's encoding-mark count and the re-  
11 corded first print station's encoding-mark count.

12  
13        24. The method of claim 22, wherein the recording medium conveyor  
14 is also equipped with at least one index marking indicative of a reference po-  
15 sition of the conveyor, further comprising:

16        calibrating the distance between the print stations with reference to the  
17 first encoding marks by moving the conveyor in an advance direction and de-  
18 tecting the at least one index marking, when moved past the print stations,  
19 while detecting the corresponding first encoding marks;

20        moving the conveyor to print images on the recording medium while de-  
21 tecting the first and second encoding marks at each print station, so as to ob-  
22 tain also printing-station-related movement information; and

23        registering the images being printed by the different print stations with  
24 each other in the movement direction based on the movement information  
25 and using the distance calibration.